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ABSTRACT

The Organisation for Economic Cooperation and Development (OECD) has set up a program for educational building to help promote innovation and change in current school building practices. Information is exchanged by (1) short leaflets summarizing emerging issues or innovating activity in different countries, (2) indepth studies of major issues, and (3) occasional international follow-up symposia. The scope of the program and several of its results are described in this article. (Author/MLF)

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Building for Educational Change

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PUBLICATIONS

SCHOOL BUILDING AND EDUCATIONAL CHANGE (Pearson, E.), OECD, Paris, 1975 (60 pages, £1.30 $3.25 F13,00)

BUILDING IMPLICATIONS OF THE MULTI-OPTION SCHOOL (Ader, J.), OECD, Paris, 1975 (112 pages, £3.60 $9.00 F36,00)

INDUSTRIALISED BUILDING FOR SCHOOLS (Oddie, G.B.), OECD, Paris, 1975 (78 pages, £2.30 $5.25 F21,00)

PROVIDING FOR FUTURE CHANGE – ADAPTABILITY AND FLEXIBILITY IN SCHOOL BUILDING, OECD, Paris, 1976 (112 pages, £3.00 $7.00 F28,00)

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INFORMATION LEAFLETS

(available from the PEB Secretariat, OECD, Paris)

1. School Building Today and Tomorrow, 1973
2. Maiden Erlegh: An English Secondary School Development Project (Booth, C.), 1973
3. C.R.O.C.S.: A Swiss Industrialised School Building System (Lenssen, P.), 1973
4. f.f.5: A Canadian "Casework" or Furniture and Equipment System for Schools (Lenssen, P.), 1974
5. Industrialised Building Systems, Educational Objectives and the Problem of Change (Phillips, C.W.), 1974
6. Institutional Arrangements for School Building (Lindsay, N.), 1975
7. Teachers and School Building (Rhode, B.), 1976
8. Den Helder: A Dutch Secondary School Development Project (Geursen, T.), to be issued.

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Building for Educational Change

Spending on education is now a massive item in national budgets. In the United Kingdom, to take only one example, it accounted for 12 per cent of public spending in 1973-1974, costing one-fifth more than health and personal social services and a third more than either defence or housing. Most of this money meets recurrent costs. It is the financial input into, so to speak, the education industry. But like any other industry, the effectiveness of education depends on having the right kind of capital equipment, using it to good purpose, and keeping it up-to-date. School buildings, with their furniture and associated equipment represent, in effect, the major capital asset of education. To help promote innovation and change in current school building practices, OECD has set up a Programme for Educational Building in which eighteen Member countries participate formally and several others informally.

The following article, written by Guy Oddie, Senior Advisor to the OECD Programme and Professor of Architecture at Edinburgh University, illustrates the scope of the programme and describes several of its results.

The Right Kind of Building

- *Effect of New Modes of Learning*

Getting value for money means first of all getting buildings of the kind that suits the activities which are to go on in them. This may seem simple enough if education is seen in terms of class-based expository teaching or in terms of work at benches in laboratories or workshops. In some schools education is still seen this way. But it is now widely recognised that effective education, which uses valuable teaching skills to best advantage, demands a much richer mix of activity. And if school buildings permit no more than the comparatively restricted activities of tradition, then the newer more effective modes are inhibited. To that extent, if new buildings are built in this way, not only is the capital expenditure ineffectively used, but so is the recurrent expenditure on teachers' pay. Policies are needed which prevent this from happening. Similar policies are also needed to allow for existing buildings to be re-modelled.

The newer modes of learning still require areas for formal instruction, lectures or demonstrations. But there is a desire, also, for less rigidly predetermined spaces reflecting the need for teachers to be able to seize a learning opportunity when it presents itself and to structure their teaching around it. So space is needed for small groups, for discussions and seminars; for independent study and investigation; for teams of teachers to discuss common projects and prepare teaching material, and for accommodating new teaching/learning resources, such as tapes, film-strips, computer terminals and so on, to which pupils as well as teachers need easy access. These are the needs expressed by leading educationists and the more adventurous of practising teachers. But, in too many instances, when architects have asked them to be specific about how many and what size of space are needed in any particular building, they have been unable to give a clear answer, for they are not used to seeing educational ideas in terms of physical requirements. Architects have therefore tried to get round the difficulty by providing large areas of undivided space, hoping that teachers would then create, by means of movable partitions or varying furniture arrangements, the kind of space division they wished to have. But this has not worked either—because what is important to teaching is not just the size or number of spaces, but the kind and quality of environment which each of them provides. Thus the Programme

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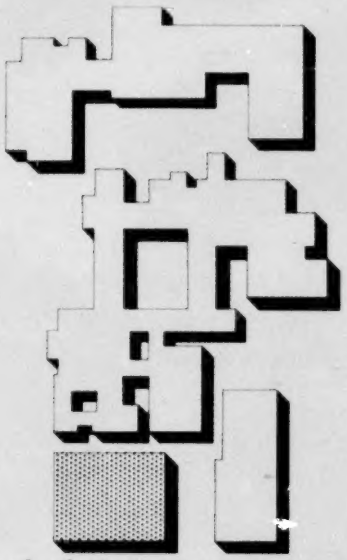
New modes of learning require new kinds of accommodation allowing diversity of activity and environment.

1. Maiden Erlegh Secondary School



Source : Guy Oddie, Industrialised Building for Schools, OECD, Paris, 1975

has shown that, *even when traditional building patterns have been left behind, much of the money spent has gone on the wrong kind of building.*

Fortunately, however, the Programme has also been able to draw attention to examples where this has not been the case.

- *An Example*

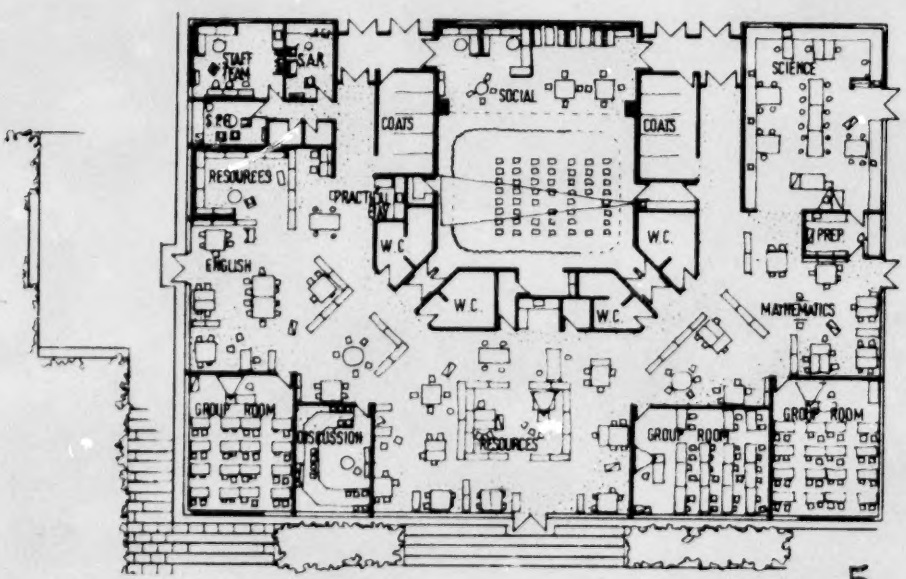
One such example will illustrate how building can facilitate the newer modes of teaching and, more importantly, how abstract concepts can, if the right communications between educationists and architects are established, be translated into practical reality.

Figure 1 shows the block plan of an English secondary school which has been recently extended in order to increase the number of pupils accommodated and to cater for the wide range of educational activities associated with comprehensive education for the 11 to 18 year age group. The extended building consists of the original building and a number of additional separate blocks, each tailor-made to a different set of requirements. Figure 2 shows the detailed plan of one of these blocks which is intended to serve as the headquarters of the 11 to 13 year olds.

Only three of the spaces in this block (accounting for only about 12.5 per cent of the floor area) in any way resemble or can be used as traditional classrooms. Yet the number of pupils which the block may accommodate at any one time can be the equivalent of about eight or nine classes. This means that at any given moment some two-thirds of the pupils are engaged on activities outside the traditional classroom, with perhaps two classes grouped together in the auditorium in the middle of the north side of the block, another class in the science laboratory, and the remaining third disposed in the free-flowing spaces surrounding the southern half of the auditorium. All the pupils in this remaining third will be working either individually or in groups of two or three. Each may have a place at one of the tables as his working base but will move frequently and freely over to one of the resource areas to consult a book, to project a film strip, or perhaps to work at a computer terminal; or he may go to get help from one of the several teachers who will be working in the same general space. From time to time one of these teachers may gather a small group of pupils together and go with them into the discussion room to talk over the results of their work.

Not all the activities pursued by the 11 to 13 year olds in this particular school will take place in this particular block which is their headquarters or base. They will move to another part of the building for music and drama, for example, or for arts and crafts, or for physical education. But it will be noted that in this one block alone quite a variety of accommodation is provided. Some of the accommodation has special environmental requirements, like the auditorium, or needs special servicing like the science laboratory. Other parts like the group rooms or the discussion room need aural and visual privacy so that class and teacher can be undisturbed and will not disturb the individual work going on in the general space; and each of these reserved spaces needs particular dimensions to suit the size of group which occupies it.

2. Headquarters of the 11 to 13 age group in the school shown in Figure 1



Source : Guy Oddie, Industrialised Building for Schools, OECD, Paris, 1975

- *Educationists as Architects*

The importance of the successful example just described is not as a model to be copied. On the contrary, its success lies in meeting one particular approach to school organisation and curriculum. Its importance lies in the means that were employed to translate the organisational and curricular concepts into terms of built facilities. The architects did not draw the plan from thin air. The plan evolved as the result of an extended dialogue between architects and educationists. And both the architects and educationists were of a rather special kind. The architects had accumulated a long experience, based on first-hand observation of teachers attempting to overcome the obstacles presented by buildings unsuited to their aims, while the educationists, as the result of equally long experience, had developed acute insights into the physical implications of new educational approaches. In other

words, the architects had unusual expertise in educational problems and the educationists were halfway to being architects themselves.

The Programme suggests that all countries need to increase the number of senior and experienced teachers who, mainly as the result of in-service training, can engage in effective dialogue with architects in formulating and developing design briefs. A similar need exists to take more positive steps to familiarise all teachers with the opportunities which new buildings, when well-designed as the result of such dialogue, can provide for enriching educational activity.

- *Architects as Explorers*

The dialogue is of even more importance and needs to be even more exploratory and extensive when new educational concepts are under consideration. The reason is that the building itself, or at least the need to design one, serves as a means of sharpening abstract ideas into proposals for concrete action. The building itself is an important vehicle for change; so that *building implications need to be considered not as the last stage in the implementation of educational policies, but at the point when alternatives are considered for the policies themselves*. Thus to the architect's role as designer is added a new role of exploration: exploration, jointly with educationists themselves, of the physical implications of alternatives for educational development. And this exploration is directed not only towards the kind of buildings and equipment needed, but equally towards the concrete definition of the kind of educational activity which alternative policies imply.

- *The Notion of "Development Projects".*

In the end, of course, the exploration must culminate in real buildings, not in isolated or exotic experiments, but in buildings which, subject to the prevalent constraints of cost and time, indicate the direction which school buildings in general can feasibly take in reponse to changing educational—or economic or social—developments. Such buildings constitute, in effect, *development projects*.

All the activities of the Programme have led to a key conclusion: *close educationist/architect collaboration on development projects is central for succes in getting the right kind of school buildings.*

Balancing the Budget for School Building

- *Importance of Norms and Standards*

Do the new modes of learning demand more expensive buildings? Not necessarily so. One of the most important findings from the Programme is the great variation that exists between countries in the building resources put at the disposal of schools of similar type and size. For example, floor areas (a major cost determinant) in secondary schools vary between countries from less than 7m² per pupil to as much as 20m². Yet examples have been found where the new modes of learning are satisfactorily provided for within the lower figure. Thus over Member countries as a whole there is considerable scope for economy without jeopardising educational needs.

The Programme has indicated that to secure these economies a number of important steps are necessary, particularly with respect to the norms and standards which apply to school building. In many countries those currently in force attempt to specify the nature and quality of buildings (and by implication the consequent costs) by means of standard schedules of accommodation or by prescribing the dimensions and shape of rooms. But to do so overlooks the dynamics of education in which as new needs arise, old ones disappear. Such norms create the risk that redundant provision will be retained and desirable innovation inhibited. They need to be revised if resources are not to be dissipated on meeting needs which no longer exist or on making provision for new need that is so inadequate as to be less than fully effective.

- *Standard Cost Limits*

Some countries have been successful in getting rid of obsolete provision to make economic room for new requirements. Here an important aid has been what may be described as a "standard cost strategy". This strategy recognises that "the right kind of building" can not be specified in precise terms. Between what is educationally acceptable or unacceptable there is no hard dividing line, but rather a wedge: a wedge of opportunities which increase or decrease according to how sharply costs constrain them. Thus standards of quality may vary from the thin to the thick end of the wedge, but costs can be made to conform to a single standard—which of course can be raised if too many buildings have to make do with the thin end.

Both educationists and architects have been found to respond well if given the chance to collaborate in getting the best building they can within a standard limit of cost. Knowing that they will get no building at all if they exceed the limit, they have every incentive to keep within it. Knowing that they can not, so to

OECD's Educational Building Programme

The purpose of the Programme is to provide for the exchange of information and experience among Member countries which will help them to use their school building resources as effectively as possible.

It does this in three ways. First, by publishing short leaflets *summarising emerging issues or innovatory activity in different countries. These are not definitive studies, they simply provide early notification of topics which individual countries will find useful to follow up on their own account.*

Secondly, the Programme undertakes in depth studies *of major issues concerned with getting value for money, in terms both of new buildings and optimum use of the existing stock. The studies are carried out by expert consultants in collaboration with the Secretariat and result in published reports available through the Organisation's usual distribution channels. They represent the major effort in the Programme.*

But, however widely publications may be disseminated and read, they are no substitute for personal contact. Finally, therefore, the Programme arranges for occasional international follow-up symposia at which senior administrators, educationists and architects can exchange views and provide information about experience in their respective countries. The first of these, held at Buxton, England, was concerned with school building and educational change; another on school and community building is planned for the autumn of 1976.

A circulation area in an old school transformed into a teaching space

speak, "keep the change" if they spend less, they have every incentive to get maximum value for the money allowed. The discipline that a standard limit imposes has been a major contributor to the success of development projects and has ensured that the proposals they incorporate are realistic in terms of wider practice.

- *Reducing Costs by More Intensive Use*

One way of keeping expensive floor area towards the lower end of the range is to ensure that the minimum of accommodation is reserved for activities which occupy only a few hours of the teaching day. Old school buildings, which include such items as assembly halls or lavish circulation areas offer considerable scope for more intensive use if these parts of the accommodation can be converted to other uses. In this respect properly designed furniture and equipment have an important contribution to make, and so form another topic of investigation under the Programme. Well-designed furniture can also mean that less area is needed for a given activity and that a wider range of activities can be accommodated in the same space.

Even more effective in making economies by more intensive use is to extend the hours during which the building can be used, not only by the school-age population but by the community at large. Thus the coordination of school and community facilities represents yet a further interest of the Programme, an interest which is also bound up with problems of location.

The "Right Place"

Many present examples of coordinated school and community facilities stem from no more than the desire to intensify their use. But even greater importance is lent to such coordination by the new role envisaged for education as a stimulus in community development. A growing body of opinion holds that education can no longer be confined within the sole realm of the school; it must form an integral part of more global policies aimed at meeting a variety of cultural and social needs. Whereas school building has been seen, until recently, as independent of building for other purposes, such independence now seems likely to give way to interdependence. And the buildings provided will need to promote the inter-action of education with other sectors of social activity such as health, welfare and recreation

For both economic and social reasons many countries are now seeking to renew and revitalise the inner areas of towns which earlier expansion has left derelict or almost abandoned. Steps towards this end, such as the increase in the ratio of housing to offices or other work milieu, and the introduction of new transport modes and networks, may increase the number of people seeking educational services, despite a stabilisation or even decline in the numbers subject to compulsory schooling—a fact which may make it necessary to find new uses for existing school facilities. Certainly the pattern of population distribution is likely to be changed. And the new population patterns will probably coincide only rarely with the distribution of existing facilities. Thus besides the considerable problems of what kind of facilities are necessary (and can feasibly be provided) there is the equally considerable problem of where they should be located to meet social and economic objectives in re-shaped networks (1).

Getting Buildings Quickly Enough

At some time or other, most Member countries have encountered emergencies in meeting educational demand which could only be met by stop-gap industrialised buildings. On the other hand, industrialised building has been the means, in some cases, of not only meeting emergencies but of sustaining large scale investment programmes over extensive periods of time, with a resulting quality as high as that usually obtained from conventional alternatives. This, and the merits of industrialisation in general, have tempted many policy-makers to believe that industrialised methods might hold the key to providing school building both at acceptable cost and at the required tempo. Another activity in the Programme has been concerned, therefore, to test this view and to identify the policies needed if such methods are to be used to best advantage.

The first conclusion from this activity is that industrialised building comes into its own when the building industry of a country is unable to meet demand solely by conventional methods. The tendency then, however, is for industrialised building systems to be developed in response to general market needs. If the particular (and different) needs of education are not to be neglected as a consequence, educational interests need to be effectively represented in the development of these systems. Such representation demands once again, the closest partnership between architects and educationists in determining the kind of building which

(1) A second symposium on School and Community Building in relation to Urban Dynamics, *is planned as a Programme activity for the autumn of this year.*

systems must be able to produce. It also demands measures to promote a positive flow of communication between the architect/educationist partners and the system producers, as well as between these and the administrative mechanisms responsible for commissioning buildings, furniture and equipment.

Provision for Future Change

Buildings, by their nature, tend to outlive the purpose for which they were originally intended. What steps can be taken, therefore, to make them easily adaptable to meet the requirements of an unforeseeable future?

In setting out to answer this question the Programme has, to begin with, made a useful distinction between adaptability and flexibility. Adaptability is the characteristic which enables subsequent alteration to be made to the physical fabric of the building. Flexibility has been defined as a quality in the building as originally planned—a quality which allows new purposes to replace old ones *without any need for physical adaptation.* The greater the flexibility, the less likely is adaptation to be needed.

• *Aids to Flexibility*

The educational practices now gaining currency support such flexibility. They are best satisfied by a balance of, on the one hand, specialised accommodation committed to a variety of specific purposes, and on the other, general spaces suited to the wide range of less specific activities which occupy the greater part of the timetable. OECD's Educational Building Programme has shown that accommodation balanced in this way, and carefully planned to allow the free flow of activities from one kind of space to the other, can provide for many alternative educational requirements. Figure 3 shows the same building as Figure 2 but accommodating an adult education centre instead of the 11 to 13 year olds for whom it was first intended. For such a change, no adaptation is required, the plan itself having sufficient flexibility.

• *A Strategy for Adaptability*

But if flexibility is the first line of defence against early obsolescence, what resources may still be merited to provide for adaptability? OECD's studies have suggested a strategy for maximising adaptability without higher first costs or sacrifice of present needs. Physical adaptation means, in effect, removal, replacement, addition or relocation of building components. To spend money on maximising the relocatability of components which may never need to be relocated is to pay in advance for a very uncertain benefit. The preferable strategy is to "pay as you go" by deferring expenditure until adaptation proves to be needed. The studies suggest technical means whereby expenditure on eventual adaptation will not be increased by the nature of the initial provision.

The investigation has thus shown that there is no need to sacrifice the known needs of today to the unknowable needs of tomorrow. At the same time it has provided the warning that adaptability is no substitute for determined decisions about the form buildings should take if present needs are to be properly met.

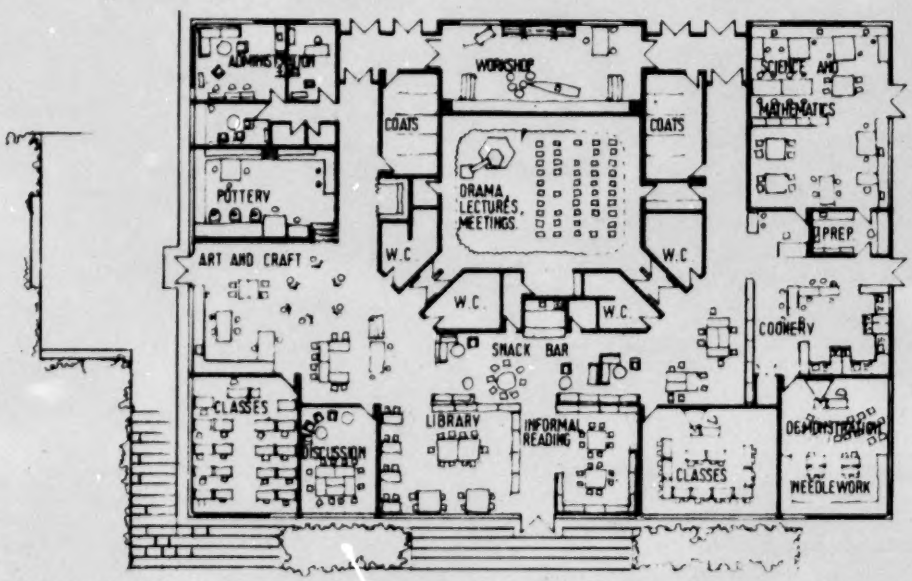
Value of the Programme

Education in many countries is now moving in directions which imply complex consequences for educational building. While the number of children of compulsory school age is stabilising or declining, emphasis is shifting to demands for pre-primary and post-compulsory and recurrent education in various forms. More attention is being paid to the special needs of the under-privileged, to provision for "drop-outs" and to the role of education in community development. The resulting new activities will demand new kinds of buildings, either new or converted. The interaction of education with other community services will require new arrangements for inter-sectoral cooperation. Clearly educational building problems will continue to loom large in the years ahead.

The Programme has laid the groundwork for tackling these emerging problems systematically. Practical application of the conclusions as a whole should result both in substantial savings and increased efficiency through more rational use of available resources.

Economical management of educational building resources is not primarily a technological matter, however important technology may be. Rather it demands that education itself, educational planning, building technology, design and procurement processes, and institutional arrangements too, constitute a network of related issues which have to be regarded as a totality. In this respect educational building need not be seen as more difficult to manage or more peculiar than building for other purposes. On the contrary, it represents a convenient and comparatively easily-handled model which deserves attention from anyone concerned with the effective use of resources in providing a built environment responsive to social, economic and cultural needs.

3. Headquarters of the 11 to 13 age group in the school shown in Figure 2 rearranged to accommodate an adult education centre



Source: *Providing for Future Change. Adaptability and Flexibility in School Building*, OECD Paris (*to be published shortly*)

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